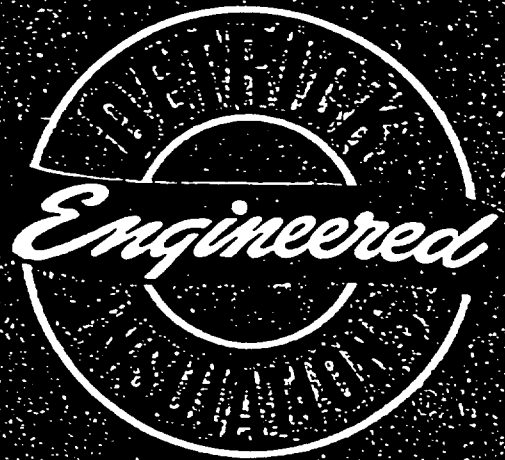


PLAINTIFF'S
EXHIBIT
MHD-180



DETROIT

***Industrial
Insulations***





High Temperature Industrial Insulations

For more than 45 years, M. H. Detrick Co. has been directly engaged in the design of methods and materials for the efficient control of heat in industrial processes. This vast experience, with all its accumulated knowledge and skills, has gone hand in hand with constant research and laboratory investigation.

Detrick's unique combination of technical knowledge, broad experience, highly developed design skills, unexcelled laboratory facilities, and modern manufacturing techniques is at your service when you specify Detrick Industrial Insulations. The Detrick name is your assurance of unfailing quality.

PRODUCT RECOMMENDATIONS AND USE LIMITATIONS

The Detrick insulation products are designed to provide specific performance characteristics for the applications indicated. Each product is well adapted to its intended use.

Each product is limited to a specific temperature range. See the following table for the recommended temperature range for each product. See also the table for the recommended application and limitations of each product. Each product is also limited to a specific application.

GRIPTEX® BLOCK INSULATION

to 1900 F

A unique block insulation used on heated equipment at temperatures ranging from ambient up to 1900 F. Made from specially processed mineral wool fibers combined with other selected high temperature materials. Offers practical advantages for a wide range of industrial applications. see page 3

711 INSULATING CEMENT

to 1800 F

A dry mixture of high temperature mineral wool fibers specially processed with other ingredients to produce a "plastic" insulation for use on heated equipment. The dry material is ready to be mixed with water to a mud-like consistency, for application on heated equipment to be operated up to 1800 F. see page 4

UTILITY FINISH CEMENT

to 1200 F

A hydraulic-setting, combination insulation and finishing cement. Designed for use on heated equipment of all types, valves, fittings, etc. Utility finish cement is used as a one coat finish over blocks and blanket insulation. Sets up hard without heat being applied. see page 4

BLANKET INSULATIONS

to 1200 F

Light, resilient mineral wool felted in large flat sheets between different styles of metal fabrics, for hot face temperatures up to 1200 F. Suitable for application to curved or flat surfaces. see page 5

PYROSCAT® FIREPROOFING CEMENT

to 2000 F

A special formulation of high temperature aggregates, fibers, hydraulic binder, and other materials. For fireproofing structural steel, tanks, tower skirts, etc. Ingredients are factory-blended to a uniform dry mixture ready for application after mixing with water at job site. Can be sprayed, cast, or troweled. see page 6

OTHER CEMENTS

ranges to 1800 F

Detrick furnishes a complete line of finishing, casing, and bonding cements in various temperature ranges up to 1800 F for use with other insulating materials. see page 7

*A Detrick trade name.

LOOSE AND GRANULATED WOOLS

to 1600 F

Manufactured from long, fine mineral wool fibers for applications up to 1600 F. Supplied in loose wool form for hand packing. Supplied in granulated form (small nodules) for hand or pneumatic methods. Fireproof and chemically stable. see page 8

MINERAL WOOL FELT

to 450 F

Made of high temperature, chemically stable mineral wool. Fibers felted and bonded together to improve handling properties. see page 8

THERMAL COAT WEATHERPROOFING

to 450 F

A weatherproof protective coating for insulation. Seals insulation against weather; affords leathery, protective finish for both outdoor and indoor installations. see page 8

BOILER WALL COATINGS

to 400 F or 700 F

Mastic sealing materials commonly applied over masonry settings to reduce air infiltration. Furnished in standard grade for use to 400 F; in high temperature grade suitable to 700 F. Available in trowel and spray consistencies. see page 8

DETROC® ASBESTOS BOARD

to 1200 F

A strong inorganic board having unusual physical and chemical properties. Acid and heat resistant. Has excellent strength even when saturated with water or steam. see page 8

ASBESTOS ROPES

to 1000 F

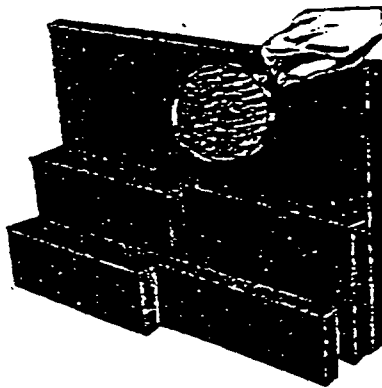
Made of pure crocidolite (blue) or amosite (white) asbestos fibers held firmly in an open, lattice-braided jacket. Highest resistance to acid and caustic exposures. see page 8

DECRETE® CASTABLE INSULATIONS

to 2100 F

A series of castable insulations made of high temperature aggregates and binders; provides an initial hydraulic set which forms a ceramic bond when heat is applied. Furnished in four types designed for various thermal or strength requirements. see page 8

GRIPTEX® Block Insulation



Griptex Block Insulation is designed for use on heated equipment operated at temperatures from ambient up to 1900 F. Specially processed mineral wool fibers are combined with other high temperature materials to provide these practical advantages:

Grip-tight Texture: The crusty, embossed surface provides better handling strength, less dust, and stronger adhesion of cement finishes.

King Sizes: The larger sizes (18" x 24" and 24" x 36") are available as standard at no extra cost. Fewer pieces, fewer joints, fewer attachments, less waste of time and material. Modular layouts are feasible.

All-Purpose Temperature Service: Meets insulation needs for temperatures from 70 F to 1900 F.

Lower Cost: Griptex blocks cost less per board foot than many insulations having inferior thermal value and limited temperature range. Easy to install. Cut-outs easily made with knife or saw. Material, construction, and maintenance costs are less. Fuel costs in operation are reduced, too.

Temperatures to 1900 F

Standard Sizes

6" x 18", 6" x 36", 12" x 18", 12" x 36", 18" x 24", 24" x 36"

Thicknesses

1", 1½", 2", 2½", 3", 3½", 4"

Recommended Thicknesses

The operating temperature maintained, cost of fuel, hours of operation, etc., govern the economical thickness of block insulation. The table below, taken from U. S. Department of Commerce Commercial Standard CS-117, offers a practical guide for typical applications:

Operating Temperatures	Thickness of Griptex Block	Operating Temperatures	Thickness of Griptex Block
Up to 200 F	1"	700 to 900 F	3½"
200 to 400	1½"	900 to 1,100	4"
400 to 500	2"	1,100 to 1,300	4½"
500 to 600	2½"	1,300 to 1,500	5"
600 to 700	3"	1,500 to 1,600	5½"

Specification References

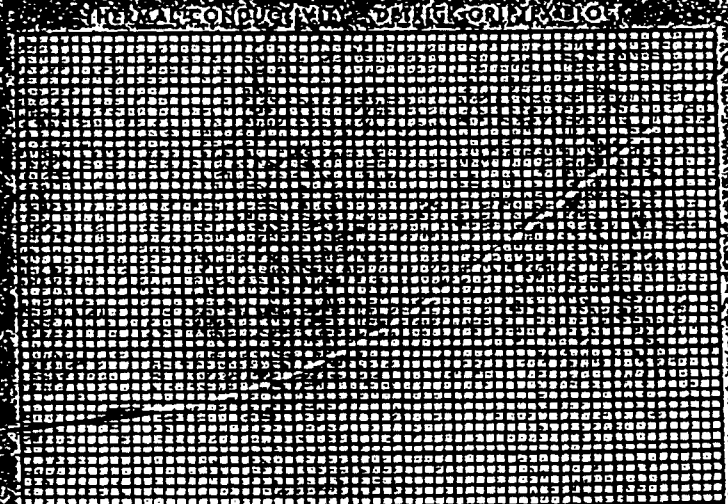
Detrick Griptex blocks comply with performance requirements of ASTM Specification C-392, Class 2 and Federal Specification HH-1-564.

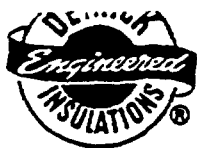
Physical Properties

Temperature Range.....	Up to 1900 F
Thermal Conductivity.....	See graph
Compressive Strength.....	18 psi
Breaking Strength (10" span).....	30 lb per in. thick
Shrinkage at 1900 F.....	1.3%
Density.....	18 lb per cu ft
Stability.....	Inert, durable
Resistance to Moisture.....	Water repellent
Resistance to Corrosion.....	Noncorrosive
Handling Characteristics.....	Cleaner, less dusting



Griptex block being applied to hot atmospheric air burner combustion chamber.





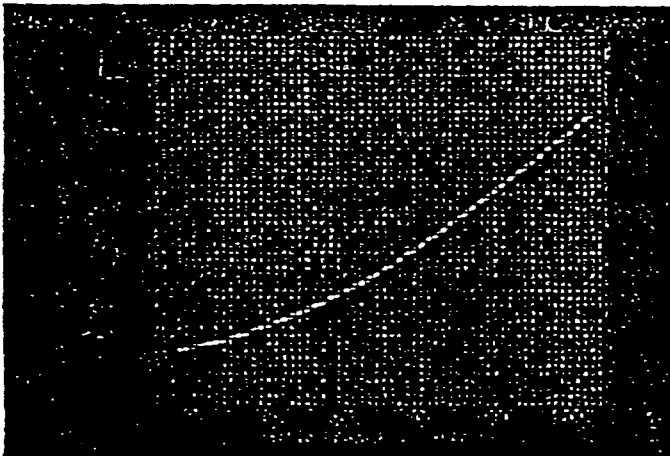
711 INSULATING CEMENT

Detrick 711 Insulating Cement is a dry mixture of high temperature mineral wool fibers, specially processed with other ingredients to produce a "plastic" insulation for use on heated equipment. The dry material is ready to mix with water to a mud-like consistency, for application on equipment to be operated at temperatures up to 1800 F.

Uses and Advantages

711 Insulating Cement has excellent workability and adhesion. It is suitable for application by both trowel and gun methods. Applied over block or blanket insulations, it fills open joints and provides a monolithic surface for any subsequent finish. It is used on valves, fittings, and other irregular surfaces by building it up to the required total thickness.

711 Insulating Cement assures maximum coverage and low shrinkage. The resilient balls of mineral wool do not collapse when mixed with water. (See table of physical properties). After 711 Insulating Cement has dried, the myriad tiny air cells entrapped in the wool nodules impart a high thermal value, with exceptional resistance to heat transfer.



UTILITY FINISH CEMENT



Detrick Utility Finish Cement is a hydraulic setting, combination insulating and finishing cement, designed for use on heated equipment of all types, and valves, fittings, etc. Most commonly used as a single layer finish over block and blanket insulations. For temperatures up to 1200 F.

Physical Properties—Trowel Application

Water Ratio.....	12 gal per 50 lb bag
Dry Coverage.....	50 sq ft 1" thick per 100 lb
Material Requirements.....	2 lb per sq ft, 1" thick
Compressive Strength.....	45 psi
Density (applied and dried).....	24 lb per cubic foot
Shrinkage (wet to dry, by volume).....	15%
Thermal Conductivity.....	See graph
Temperature Limit.....	1800 F
Reclaimable to.....	1000 F
Adhesion to Steel (wet).....	6 psi
Adhesion to Steel (dry).....	9 psi
Corrosion Resistance to Steel.....	Non corrosive
Shipping Containers (sewn closure).....	50 lb paper bags

Tabulated values represent typical performance levels of Detrick 711 Insulating Cement, Trowel Grade. 711 "Gun" Grade Cement consists of the same basic materials, except that smaller mineral wool nodules are utilized to facilitate application with spray equipment.

Specification References

Detrick 711 Insulating Cement complies with requirements of ASTM Specification C-195 and Federal Specification HH-C-168.

Recommended Thickness

The operating temperature maintained largely governs the economical thickness of 711 Cement. Table below is a practical guide for typical installations where insulating cement is built-up in layers to the total desired thickness:

Operating Temperatures	Thickness of 711 Cement	Operating Temperatures	Thickness of 711 Cement
Up to 200 F	1"	700 to 900 F	4"
200 to 400	1 1/2"	900 to 1,100	4 1/2"
400 to 500	2 1/2"	1,100 to 1,300	5"
500 to 600	3"	1,300 to 1,600	5 1/2"
600 to 700	3 1/2"	1,600 to 1,800	6 1/2"

These minimum thicknesses are recommended for indoor applications in U.S. Department of Commerce Commercial Standard CS-117.

Uses and Advantages

Utility Finish Cement develops a smooth, hard, protective finish a few hours after application, without the presence of heat.

Subsequent drying produces no excessive surface cracking or shrinkage in thickness. A second coat is needed only when multiple layer thicknesses are specified. Occasional wetting does no damage after initial hydraulic set. Utility Finish has good wet adhesion to clean steel surfaces. Reinforcement with wire mesh netting can often be eliminated.

Jobs are easier to schedule; scaffolding costs are reduced.

Physical Properties—Trowel Application

Use Limit.....	1200 F
Dry Coverage.....	35 sq ft. 1/2" thick, per 50 lb bag
Material Requirements.....	3 lb per sq ft, 1" thick
Water Ratio.....	7 1/2 gal per 50 lb bag
Compressive Strength.....	150 psi
Density (applied and dried).....	36 lb per cubic foot
Shrinkage (wet to dry, by volume).....	1 to 3%
Thermal Conductivity @ 500 F Mean Temp.....	0.8 Btu
Shipping Containers (sewn closure).....	50 lb paper bags

MINERAL WOOL BLANKETS

Detrick Mineral Wool Blankets provide an efficient and economical insulation for hot face temperatures up to 1200 F. They consist of light, resilient mineral wool felted in large, flat sheets between metal fabrics of different styles.

The felting assures uniform density and resistance to loosening when handled. The sizes available permit application at minimum cost. Flexibility adapts the blankets to curved surfaces.

Shipping Information

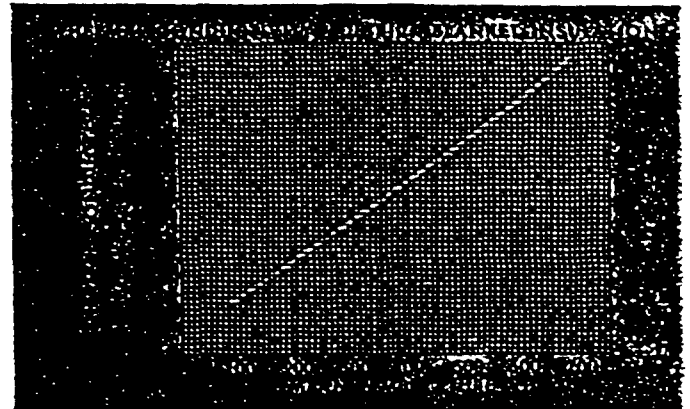
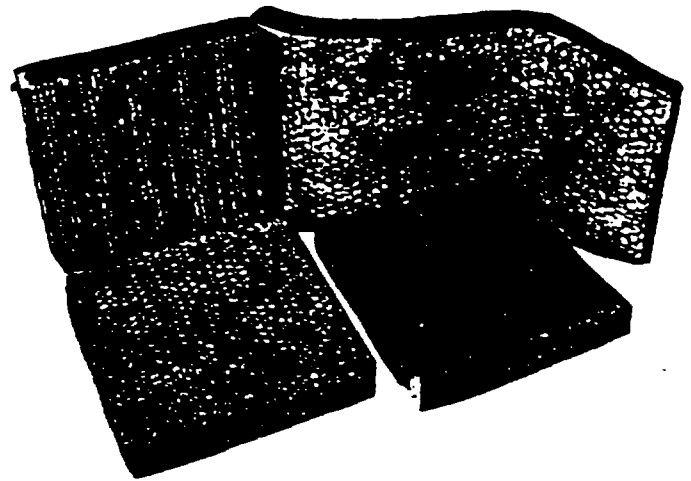
Thicknesses: 1" to 6", in 1/2" increments

Sizes: 24" x 48" and 24" x 96"

Other styles, sizes, and thicknesses on special order. Packaged in telescopic corrugated containers 24" wide, 96" long.

Specification References

Detrick Blanket Insulations comply with ASTM Specification C-263 and Federal Specification HH-I-563.

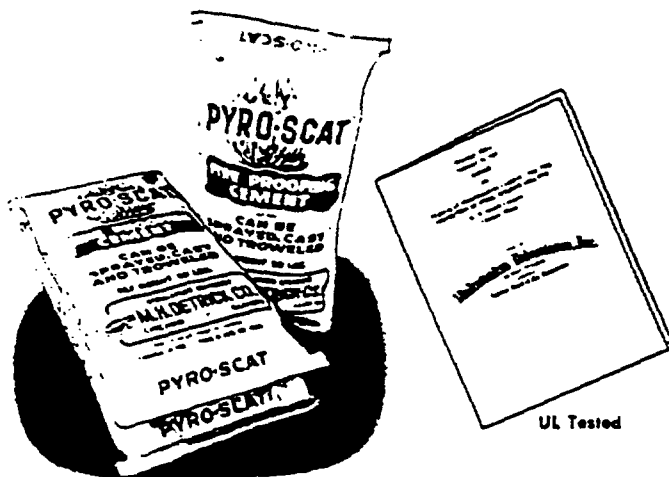


List Prices (per square foot) for Standard Styles and Thicknesses

Style	Description	1"	1½"	2"	2½"	3"	3½"	4"	4½"	5"	6"
1	1" Hex. Galv. Mesh (Both Sides)	.50	.55	.60	.70	.80	.88	.95	1.03	1.10	1.25
2	1" Hex. Galv. Mesh & Stucco Lath										
2A	1" Hex. Galv. Mesh & Expanded Lath	.55	.65	.70	.80	.90	.98	1.05	1.13	1.20	1.35
2B	1" Hex. Galv. Mesh & Rib Lath*										
2C	1" Hex. Galv. Mesh & ¾" Rib Lath**										
3	Stucco Lath (Both Sides)										
3A	Expanded Lath (Both Sides)	.65	.70	.75	.85	.95	1.03	1.10	1.18	1.25	1.40
3B	Stucco Lath & Expanded Lath										
4	Stucco Lath & ¾" Rib Lath*	.70	.75	.80	.90	1.00	1.08	1.15	1.23	1.30	1.45
4A	Stucco Lath & ¾" Rib Lath**										
5	Stucco Lath & ¾" Rib Lath*	.80	.85	.90	1.00	1.10	1.18	1.25	1.35	1.45	1.65
5A	Stucco Lath & ¾" Rib Lath**										
6	¾" Rib Lath (Both Sides)*	.85	.95	1.00	1.10	1.20	1.28	1.35	1.45	1.55	1.76
6A	¾" Rib Lath (Both Sides)**										
7	#12 Mesh Fly Screen Wire (Both Sides)	.70	.75	.80	.90	—	—	—	—	—	—
8	¾" Rib Lath & ¾" Rib Lath*	.90	1.05	1.10	1.20	1.30	1.38	1.45	1.55	1.65	1.75
8A	¾" Rib Lath & ¾" Rib Lath**										
9	Expanded Lath & ¾" Rib Lath*	.70	.75	.80	.90	1.00	1.08	1.15	1.23	1.30	1.45
9A	Expanded Lath & ¾" Rib Lath**										
10	1" Wire Mesh & ¾" Rib Lath*	.65	.70	.75	.85	.95	1.03	1.10	1.18	1.25	1.40
10A	1" Wire Mesh & ¾" Rib Lath**										
11	Expanded Lath & ¾" Rib Lath*	.85	.95	1.00	1.10	1.20	1.28	1.35	1.45	1.55	1.75
11A	Expanded Lath & ¾" Rib Lath**										
*Rib Lath Turned In		**Rib Lath Turned Out									



PYROSCAT* fireproofing cement



Detrick Pyroscat is a special formulation of high temperature aggregates, fibers, hydraulic binders, and other materials, factory blended to a uniform dry mixture. It is ready for application when mixed with water at the job site, and can be applied by spraying, casting, or troweling, as job conditions require or permit.

Uses and Advantages

Pyroscat provides a lightweight, fire retardant, protective treatment for structural steel columns, beams, tower skirts, LP gas tanks, and other exposed applications. Pyroscat sets up as a hard, durable sheath capable of withstanding for hours the 2000 F flame temperatures and high pressure water streams commonly encountered in industrial fires.

Recommended Thicknesses

Fire retardant materials are normally rated in hours, based on thickness used and method of application. Thus, fire ratings for steel columns represent the hours required for heat from a standard ASTM fire to penetrate the protective treatment and raise the steel column temperature to a critical level (1200 F). The thermal conductivity and heat capacity of a material are of some importance in fire tests, but the ability of the complete treatment to withstand thermal shock without destruction is one of the most significant factors in determining practical fire ratings.

Recommended Pyroscat thicknesses were determined by physical tests on a series of sprayed, cast, and troweled applications, including direct exposure to 100 psi hose pressure both before and after exposure to severe flame conditions.

Thickness of Pyroscat	Approximate Fire Resistance
1"	2 hours
1 3/4"	3 hours (UL-R-3960)
2"	4 hours

Physical Properties - trowel application

Coverage.....1.1 cu ft/50 lb bag
Material Required.....45 lb per cu ft
Air-Cured Weight (after hydration and drying).....54.5 lb per cu ft
Compressive Strength (air-cured).....1650 psi
Compressive Strength (after firing at 1500 F).....520 psi
Lineal Shrinkage (air-cured).....Less than 1%
Lineal Shrinkage (after firing at 1500 F).....1.5%
Density (after firing at 1500 F).....49.1 lb per cu ft
Fusion Temperature.....2200 F
Thermal Conductivity (k) at 1000 F Mean Temp.....1.50 Btu
Setting Time.....4 to 6 hours

Mixing Water:

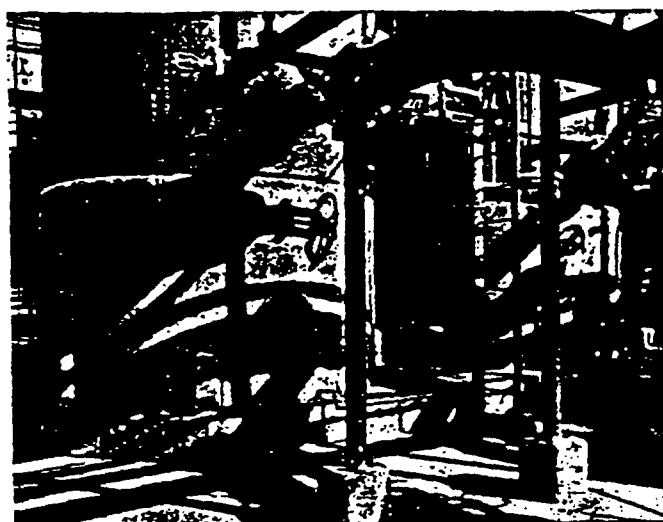
For Gun Consistency.....3 1/2 gal water per 50 lb bag
For Trowel Consistency.....4 1/2 gal water per 50 lb bag
For Casting Consistency.....5 gal water per 50 lb bag



Fire test for Pyroscat



Pyroscat applied to columns of spherical tank



Pyroscat applied to tower skirt

OTHER CEMENTS

MHD Finishing Cement

A combination of asbestos fibers and hydraulic setting binders, thoroughly premixed and packaged in 50 lb paper bags, ready to be mixed with water at the job site.

MHD Finishing Cement provides a smooth, hard, white protective coating when applied over block insulation or insulating cement. It can be painted or covered with canvas if desired.

If the insulation itself does not offer adequate "keying", a reinforcing layer of 1" mesh galvanized wire netting or expanded metal lath should be secured to the outer surface before troweling MHD Finishing Cement in place.

Use Limit: 1000 F

Dry Coverage: 25 sq ft. 1/2" thick, per 50 lb bag

Setting Time: 2 to 4 hours after mixing

No. 7 Asbestos Cement

A straight asbestos fiber cement used as a white finish coat over other forms of insulation. Furnished in 100 lb. bags. No. 7 Asbestos Cement has a dry coverage of 20 sq ft 1" thick per 100 lbs. Recommended use limit 1000 F.

Thinsuliner Cements

Thinsuliner Cement is used to line breechings and stacks, usually in combination with Griptex Blocks, applied after steelwork is in place. It has high strength, abrasion resistance, and good thermal insulating value.

Thinsuliner "SL" Cement is a lighter density material with superior thermal value. Because it affords a greater degree of internal resilience, it is often preferred when the lining is installed on the ground before it is hoisted or erected in place.

Properties	Thinsuliner	Thinsuliner "SL"
Conductivity "K" (500 M.T.)	1.36 Blu	0.95 Blu
Density—Air Cured	49.1	44.5
Shrinkage—Air Cured	0.9%	0.1%
Compressive Strength—Air Cured	840 psi	270 psi
Shrinkage—Fired at 1500 F	2.8%	2.65%
Compressive Strength—Fired at 1500 F	315 psi	105 psi
Fusion Temperature	2150 F	2250 F
Material Requirements (trowel)	47 lb/cu ft	37 lb/cu ft

DETRICK

Bonding Cement

Made from a mineral wool base, blended with asbestos fiber and other selected ingredients. It is intended primarily as an adhesive, for application on heated equipment. In dry, fibrous form for mixing with water to troweling consistency.

Used to stick block insulation on duct surfaces, breeching, brickwork, etc., until permanent fastenings are attached; also excellent sealing material for perimeter joints between adjacent blocks, or filling voids. Coverage 125 sq ft 1/2" thick per 50 lb bag. Use limit 1800 F.

Casing Cement

A hard exterior finish, furnished in dry form for mixing with water at the job site. Usually troweled in place in the panels formed by supporting structural steel members. Can be used instead of steel casings in many applications. Hydraulic setting; provides a neat protective covering for insulation, effectively sealing the enclosure.

Detrick Casing Cement withstands repeated freeze-and-thaw cycles conducted in accordance with ASTM C-290 and C-291, without deterioration. Used as an exterior finish on wall designs of oil refinery heaters, boilers, stress relieving furnaces, etc., exposed to a wide variety of outdoor weathering conditions. Dry coverage 18 sq ft 1" thick per 50 lb bag. Recommended use limit 1800 F.

Easy-Seal Cement

A vermiculite base product used to reduce air infiltration through brickwork, also as an expansion joint material. Shipped in dry form ready to be mixed with water at job site. Coverage 30 sq ft 1" thick per 40 lb bag. Recommended use limit 1800 F.

T-60 Insulating Finish

Detrick T-60 Cement affords a superior insulating finish for use on valves, pumps, fittings, and other equipment treated with Thermon high heat-transfer plastic compound. (Thermon is a trade name of Thermon Mfg. Co., Houston, Tex.)

Detrick T-60 Insulating Finish is applied directly to the surface after the Thermon Plastic has set and is troweled carefully into a hairpin reinforcement. Sets within two hours after water is added. Dry coverage 20 sq ft 1/2" thick per 50 lb bag. Use limit 1200 F.



M. H. DETRICK CO., INSULATION DIVISION

HIGH TEMPERATURE INDUSTRIAL INSULATIONS

Mineral Wool Loose and Granulated



Insulating wools are composed of lightweight, resilient mineral fibers of extremely small diameter, having excellent thermal value. Furnished in 40 lb bags in loose form for hand packing, and in granulated form for hand packing or blowing. Fireproof, resilient, chemically stable. Effective to 1600 F.

Mineral Wool Felt



Suitable for temperatures from sub-zero to 450 F. Fibers uniformly distributed and bonded together. Low thermal conductivity. Made in light, medium, and heavy densities.

Standard Sizes

12" x 18" and 18" x 24"

Thicknesses

1", 1½", 2", 2½", 3", 3½", 4"

Thermal Coat Weatherproofing

An asphalt base emulsion; provides a durable, fire resistant coating for insulation. Affords a leathery protective finish for indoor or outdoor installations. Ready for immediate application; easily troweled. Dries to black, odor-free, water resistant finish. Material requirements 2 lb/sq ft ¼" wet thickness. Available in 30 gal and 50 gal drums and 5 gal pails. Effective to 450 F.



Boiler Wall Coatings Block

Special blends of asphaltic mastics, combined with asbestos fiber and mineral fillers. Provide protective seal on steel and masonry surfaces.

Available in Standard Grade for uses to 400 F; in High Temperature Grade to 700 F. Both trowel and spray consistencies are available in 30 and 50 gal drums and in 5 gal pails. Material requirements are estimated on wet coverage of 10 to 12 sq ft ½" thick per gal.

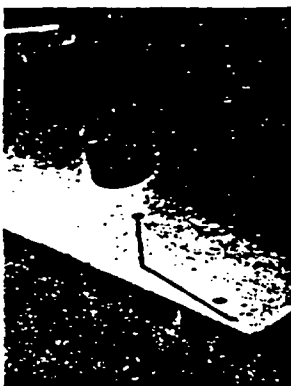
Type—T-178.....Standard Grade...trowel consistency

Type—S-678.....Standard Grade...spray consistency

Type—T-278.....High Temperature Grade...trowel consistency

Type—S-778.....High Temperature Grade...spray consistency

DETROCK® Asbestos Board



An extremely strong and durable high temperature board, composed entirely of inorganic materials. Excellent heat resistance to 1200 F.

Detrock Asbestos Board is essentially impervious to most acids, does not soften and fall apart when saturated with water or steam. Can be sawed, sanded, beveled, screwed, or nailed.

Standard size: 4 ft by 8 ft.

Thicknesses: ¼" and ½"

Weight: ¼" board, less than 1 lb per sq ft; ½" board, 1.8 lb/sq ft.

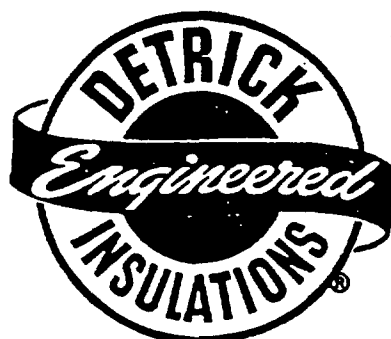
*A Detrick trade name

Asbestos Ropes



Detrick offers two distinctive types of Asbestos Rope, recommended for acid or caustic exposures. Blue Rope (crocidolite fiber) has no equal for chemical resistance; white (amosite) Rope is nearly as effective. Both rope compositions are 100% pure, containing no cotton or other organic fillers. The twisted fibers are held firmly in an open lattice-braid jacket to provide good handling strength.

Detrick Asbestos Ropes are used as a flexible insulation and seal for temperatures to 1000 F. Available in standard 100 foot coils in diameters of ½", ¾", 1", 1½", and 2".



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INSULATION DIVISION
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